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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,651	08/29/2001	Chia Chi Feng	2769-106	4794

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EXAMINER	
WOZNIAK, JAMES S	

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/940,651	FENG, CHIA CHI	
	Examiner	Art Unit	
	James S. Wozniak	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *8/29/2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

2. **Claim 9** is objected to because of the following informalities: "method of claim 1" should be corrected to read --method of claim 8--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 2, 5, 17, and 19** are rejected under 35 U.S.C. 102(b) as being anticipated by Huang et al *("A Mandarin Speech Dictation System Based on Neural Network and Language Processing Model," 1994)*.

With respect to **Claim 1**, Huang discloses:

Processing a phonetic sound generated by a user and transforming the phonetic sound into a phonetic waveform *(reception of an input speech signal, Fig. 1, and Page 442, Experimental Conditions)*;

Dividing a sound packet of the phonetic waveform into different parts *(segmentation, Page 439, Preprocessing Process)*;

Recognizing the different parts of the sound packet respectively *(vowel recognizer and consonant recognizer, Fig. 1)*;

Combining the recognized parts for determining a character corresponding to the phonetic sound *(homonym characters, Fig. 1)*; and

Completing the phonetic recognition *(output text resulting from recognition, Fig. 1)*.

With respect to **Claim 2**, Huang recites:

The sound packet of the phonetic waveform is divided into the parts of consonant, wind and vowel *(vowel, consonant, and tone recognizer, Fig. 1)*.

With respect to **Claim 5**, Huang discloses:

Processing a phonetic sound generated by a user and transforming the phonetic sound into a phonetic waveform *(reception of an input speech signal, Fig. 1, and Page 442, Experimental Conditions)*;

Analyzing physical properties of the phonetic waveform for acquiring characteristic parameters of the waveform *(cepstral vectors, Page 439, Preprocessing Process)*;

Dividing a sound packet of the phonetic waveform into parts of consonant, wind and vowel, according to the characteristic parameters *(vowel, consonant, and tone recognizer, Fig. 1, and segmentation, Page 439, Preprocessing Process)*;

Analyzing the parts of consonant and vowel for waveform characteristics thereof, so as to recognize a character consonant corresponding to the part of consonant and a character vowel corresponding to the part of vowel *(finding homonym characters, Fig. 1)*;

Combining the recognized character consonant and character vowel for obtaining a corresponding character *(homonym characters, Fig. 1)*, and

Completing the phonetic recognition *(output text resulting from recognition, Fig. 1)*.

With respect to **Claim 17**, Huang teaches the phonetic recognition method as applied to Claim 5. Also Huang further discloses multiple recognition databases *(Page 442)*.

Claim 19 contains subject matter similar to Claims 2 and 17, and thus, is rejected for the same reasons.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 3 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al.

With respect to **Claims 3 and 6**, Huang discloses the phonetic recognition method as applied to Claims 1 and 5. Although Huang does not specifically disclose the vowel and consonant features recited in Claim 3 and 6, including gradation, affricate, extrusion, plosive, repeated waveform packets, turning number, wave number, and slope, with a wind portion being higher in frequency than the vowel and consonant, however the examiner takes official notice that the preceding features are all well-known in the speech processing art as a common means of linguistically describing portions of speech for classification. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of invention to utilize the features noted above for consonant and vowel classification to provide a convenient means of identifying vowels and consonants.

7. **Claims 4 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al in view of Nakata et al *(U.S. Patent: 3,928,722)*.

With respect to **Claims 4 and 7,** Huang et al teaches the phonetic recognition method as applied to Claims 3 and 6. Huang does not specifically suggest waveform division into vowel and consonant portions based upon the repeated pitch structure characteristic of vowels, however, as is evidenced by Nakata (Col. 8, Lines 57-60), this characteristic is well known in the art.

Huang and Nakata are analogous art because they are from a similar field of endeavor in speech signal processing. Thus, it would have been obvious to a person of ordinary skill in the

art, at the time of invention, to combine the repetitive pitch structure characteristic of vowels as taught by Nakata with the phonetic recognition method taught by Huang to provide a means of dividing a speech waveform in order to identify a periodic pitch structure for easily recognizing a vowel segment within a speech waveform. Therefore, it would have been obvious to combine Nakata with Huang for the benefit of obtaining a means of easily identifying a vowel portion of a speech waveform through recognition of a periodic pitch structure.

8. **Claims 8-10, 12-14, 16, 18, and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al in view of Chen et al *(U.S. Patent: 5,751,905)*.

With respect to **Claim 8**, Huang recites:

Processing a phonetic sound generated by a user and transforming the phonetic sound into a phonetic waveform *(reception of an input speech signal, Fig. 1, and Page 442, Experimental Conditions)*;

Dividing a sound packet of the phonetic waveform into different parts *(vowel, consonant, and tone recognizer, Fig. 1, and segmentation, Page 439, Preprocessing Process)*, and;

Recognizing the different parts of the sound packet respectively *(vowel recognizer and consonant recognizer, Fig. 1)*, and;

Combining the recognized parts and the recognized tone for determining a corresponding character for the phonetic sound *(homonym characters, Fig. 1)*; and

Completing the phonetic recognition *(output text resulting from recognition, Fig. 1)*.

Huang does not specifically suggest determining a tone by utilizing fore and rear frequencies, however, Chen discloses:

Determining a fore frequency and a rear frequency of the sound packet *(determining rising and falling tones by utilizing pitch extraction, Col. 6, Lines 38-50)*.

Recognizing a tone for the phonetic sound according to a rule for determining the fore and rear frequencies *(rising and falling tones, Col. 6, Lines 38-50)*.

Huang and Chen are analogous art because they are from a similar field of endeavor in phonetic recognition. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to combine the use of rising and falling tones in phonetic recognition as taught by Chen with the phonetic recognition method taught by Huang to provide a further means of recognizing corresponding characters in phonetic recognition by detecting tone changes between a rising and falling tone along with the pitch contour taught by Huang *(Page 439, Preprocessing Process)*. Therefore, it would have been obvious to combine Chen with Huang for the benefit of obtaining further tone recognition means.

Claim 9 contains subject matter similar to Claim 2, and thus, is rejected for the same reasons.

Claims 10 and 14 contain subject matter similar to Claims 3 and 6, and thus, are rejected for the same reasons.

With respect to **Claim 12**, Chen further recites:

The fore frequency is determined by taking an average frequency for a first quarter region of the sound packet, and the rear frequency is determined by taking an average frequency for a final quarter region of the sound packet *(average pitch of rising and falling tones, Col. 7, Lines 18-58)*.

Although Huang in view of Chen does not specifically teach that the fore and rear frequencies are determined by taking the average frequency for corresponding quarter regions of a sound packet, it would have been obvious matter of design choice to do so, since the applicant has not disclosed that acquiring average frequency data for specific quarter regions solves any stated problem or is for any particular purpose. The benefit for using such a quarter region for average frequency data acquisition would be to provide a sufficient averaging period to obtain tone data of an audio signal. Thus, in order to provide a sufficient averaging period, it would have been obvious to one of ordinary skill in the art, at the time of invention, to utilize a corresponding quarter region for the acquisition of average frequency data in determining tone information of an audio signal.

Claim 13 contains subject matter similar to Claims 5 and 8, and thus, is rejected for the same reasons.

Claim 16 contains subject matter similar to Claim 12, and thus, is rejected for the same reasons.

Claim 18 contains subject matter similar to Claims 13 and 17, and thus, is rejected for the same reasons.

With respect to **Claim 20**, Huang in view of Chen teaches the phonetic recognition processing steps as applied to Claim 13 and phonetic recognition databases as applied to Claim 17.

9. **Claims 11 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al in view of Chen et al, and further in view of Nakata et al *(U.S. Patent: 3,928,722)*.

With respect to **Claims 11 and 15**, Huang in view of Chen teaches the phonetic recognition method as applied to Claims10 and 14. Chen does not specifically suggest waveform division into vowel and consonant portions based upon the repeated pitch structure characteristic of vowels, however, as is evidenced by Nakata (Col. 8, Lines 57-60), this characteristic is well known in the art.

Huang, Chen, and Nakata are analogous art because they are from a similar field of endeavor in speech signal processing. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to combine the repetitive pitch structure characteristic of vowels as taught by Nakata with the phonetic recognition method taught by Huang in view of Chen to provide a means of dividing a speech waveform in order to identify a periodic pitch structure for easily recognizing a vowel segment within a speech waveform. Therefore, it would have been obvious to combine Nakata with Huang in view of Chen for the benefit of obtaining a means of easily identifying a vowel portion of a speech waveform through recognition of a periodic pitch structure.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Sakamoto et al *(U.S. Patent: 5,175,793)*- teaches a speech recognizer capable of identifying vowel, consonant, and glide segments of a speech input.

- Hansen et al *(U.S. Patent: 5,640,490)*- teaches a speaker independent phonemic recognition system.
- Komissarchik et al *(U.S. Patent: 5,799,276)*- discloses a letter recognition system capable of recognizing consonants, vowels, and glides.
- Akamine et al *(U.S. Patent: 6,161,091)*- teaches a speech recognition system for identifying speech segments and associated characters, which is also capable of identifying vowels and consonants.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (703) 305-8669 and email is James.Wozniak@uspto.gov. The examiner can normally be reached on Mondays-Fridays, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached at (703) 305-4827. The fax/phone number for the Technology Center 2600 where this application is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology center receptionist whose telephone number is (703) 306-0377.

James S. Wozniak
11/29/2004

DAVID OMETZ
PRIMARY EXAMINER
ART UNIT 2653